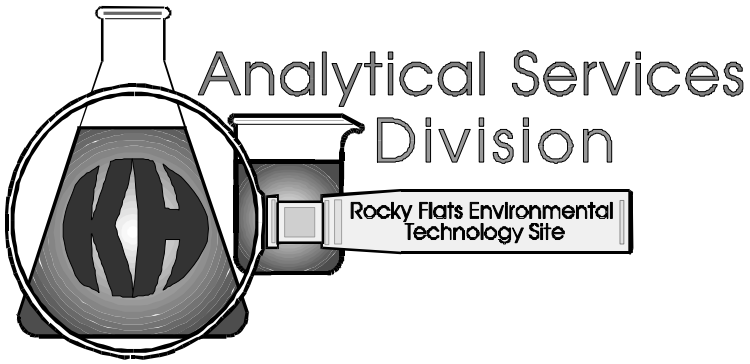

Statement of Work
For Analytical Measurements

ELECTRONIC DATA DELIVERABLES

MODULE GR02-D

August 13, 1997

Reviewed For Classification
By: Roger S. Cichorz U/NU
Date: Aug 13, 1997

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1.0 INTRODUCTION

The purpose of the Electronic Data Deliverable (EDD) module is to provide a data format that enables efficient return of quality data in support of the Rocky Flats Environmental Technology Site (Site) mission.

This requirements specification establishes the format that will be used to generate an electronic data deliverable from laboratories that perform bioassay, geotechnical, industrial hygiene, metal, organic, radiochemical, water quality, and other analyses modules in samples collected on or related to the Site. Furthermore, these requirements are provided to accomplish the goal of receiving quality electronic data for input into Rocky Flats Environmental Data System (RFEDS), Health Information System (HIS), and other Site program databases. For questions specific to the electronic data deliverable contact Kaiser-Hill Co., L.L.C., Analytical Services Division. For any questions dealing with contract specifications contact the Contract Technical Representative (CTR).

This document evolved from the General Radiochemistry and Routine Analytical Services Protocol (GRRASP) format and may contain certain fields and definitions that do not match published Site data dictionaries.

This revision of the GR02 specification consolidates and reduces the number of distinct formats previously specified. It also changes the field size for the Line Item Code in the header record.

2.0 GENERAL DESCRIPTION OF THE ELECTRONIC DATA DELIVERABLE (EDD)

This description provides contracted analytical laboratories with the required detail to complete an EDD. The general record structure is hierarchical, with one header record followed by multiple related analytical data records as specified by the Line Item Code (LIC) in a Parameter Specific Analysis Module. This grouping of one header record and multiple related detail records is referred to as a data group. All analytical data records that are placed following a header record will be associated with that header record. Detailed formats for the various Parameter Specific Analytical (PSA) modules are provided in Section 4.0 of this document.

All fields in the EDD are required to be filled, unless otherwise specified. For example, Qualifier fields may be blank-filled if certain conditions exist or the field may be reserved as blank for future utilization. Refer to the file examples in Section 4.0 for specific examples.

All EDDs are to be submitted electronically to the APO EDD Server or via e-mail. (See Appendix A.) Until the EDD Server is operational, EDDS may be submitted on a diskette, concurrently with the hard copy of the data package and mailed or shipped to:

Kaiser-Hill Company, L.L.C.
Analytical Services Division
ATTN: Analytical Projects Office
Building 881
P. O. Box 464
Golden, Colorado 80402-0464

Should a laboratory supply EDDs on a diskette, the following conditions apply:

- Diskettes must be PC-compatible, 3.5 inch high-density 1.44 megabyte diskettes.

- Diskettes must be formatted and recorded using version 5.0 or higher of Microsoft[1] Disk Operating System (MS-DOS[2]) or equivalent.
- It is recommended that each disk must be electronically labeled (see MS-DOS manual, LABEL command) with the lab code of the analytical laboratory responsible for the analysis data that will be placed on the diskette.

2.1 Character Fields:

All character fields, unless otherwise specified, shall be upper case standard printing ASCII characters. Any exceptions to case sensitivity will be explicitly listed in the specific module. All character fields must be left-justified and padded to the right with blanks. Additionally, all fields within the records will be padded to the right with blanks to the end of the field. Fields are delimited within the EDD by fixed column specifications. If data does not start at the correct column position in the record, data errors will occur and the EDD will be rejected.

2.2 Comments (Reserved For Future Use):

Comments for samples, methods, and/or analytes may be placed within a EDD file.

(**Note:** This functionality is marked 'For Future Use' since full implementation and disposition of textual comments have not been defined. All Laboratories that provide EDDs to APO are requested to not implement this option until further notice.)

2.3 End-of-line Specification:

The end of every data line will contain a carriage return/line feed combination (CR/LF) to signify the end of that line of text. Any additional data placed after the last specified field on any line is not according to specification and may cause data errors.

Important: The last specified field on each line must be padded to the right with blanks to fill the field.

2.4 Numeric Fields:

Numeric fields are unrestricted decimal numbers that may be represented in scientific notation. The format for scientific notation is as follows:

signed_decimal_mantissa[e|E][+|-]integer_exponent

with no spaces within the number itself. A negative sign (-) or a plus sign may precede the integer_exponent as indicated by [+|-] in the notation; the plus sign (+) is optional. There is no requirement concerning the location of the decimal point or left or right justification of the number in the field. Every such number will be specified by the format identifiers (W,S) where W is the width of the field and S is the number of significant digits. For example, the number 0.135 in (10,3) format is usually reported as 0.135 or .135, but may be reported in scientific notation as 1.35E-01. If reporting in scientific notation, normalization of the value is not required.

In general, no negative numbers are allowed unless indicated in the format of the specific module. If the format permits, such cases will have the minus sign immediately preceding the number itself. Plus signs are not allowed in positive numbers with the exception of the exponent in scientific notation format.

[1] Microsoft is a registered trademark of Microsoft Corporation.
[2] MS-DOS is a registered trademark of Microsoft Corporation.

2.5 Reporting Quality Control Data:

This EDD module provides a means of reporting QC data. Lab QC samples (for example, blanks, matrix spikes, etc.) are to be reported electronically using this version. Refer to GR02 Appendix C for acceptable QC item result types.

2.6 Reporting Results for Undetected Analytes:

An analyte is said to be "Undetected by a method" if either no result could be computed or the computed result is less than a method-specific detection limit. This method-specific detection limit is often called the Method Detection Limit (MDL) or the Instrument Detection Limit (IDL) for Organics and Inorganics: a Radiochemistry Limit is often called the Minimum Detectable Activity (MDA). This definition is the basis for the following rules:

2.6.1 Organics

- Refer to GR02 Appendix E - Result Qualifiers, for acceptable results qualifier identifier value characters.

2.6.2 Inorganics

- Refer to GR02 Appendix E - Result Qualifiers, for acceptable results qualifier identifier value characters.

2.6.3 Radiochemistry

- For all detected analytes, report the result value (corrected for percent solids, aliquot size, and dilution factor as appropriate for the sample media) with no U result qualifier assigned.
- For all undetected analytes for which a result was computed, report the result value (corrected for percent solids, aliquot size, and dilution factor as appropriate for the sample media) as the result with the appropriate qualifier as allowed for in GR02 Appendix E - Result Qualifiers. This differs from the rules for Organics and Inorganics in that the actual result is still reported even though the analyte was undetected.

2.7 Field Descriptions:

Field description definitions can be found in GR01-A, Exhibit G, or in PSA modules.

2.8 Data Protection and Privacy Consideration:

The information provided to the laboratory and the data results returned are covered under the privacy act of 1974 and shall be protect from unauthorized access with applicable federal law. 10 CFR 1008 Privacy Act and (Public Law 93-579).

2.9 Filenaming

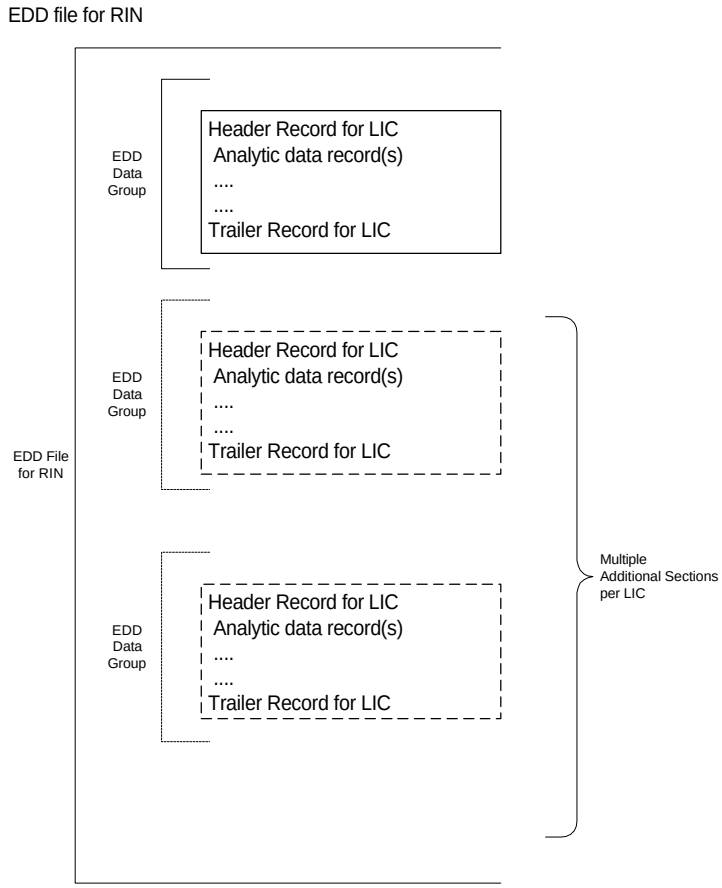
Filenames should follow the MS-DOS 8.3 character format and should be constructed to be unique and easily cross-referenced by the laboratory with the Report Identification Number. It is recommended that a file extension of .TXT be used.

Files sent via diskette or via e-mail may be zipped for compression provided they are packaged as a self-extracting executable. Files sent to the APO EDD Server (pending implementation) must be in the specified fixed column format and not compressed.

3.0 GUIDELINES FOR EDD FILE CREATION

Creation of the EDD must follow the format form specifications outlined in section 4.0 of this document. Failure to follow specifications will be cause for data rejection and require resubmittal.

EDDs are considered the electronic form of the data report package. Accordingly, an EDD file will not contain data for more than a single RIN. However, a RIN may be comprised of multiple report package modules corresponding to the various Line Item Codes (LICs) requested for analysis. Within the data file for a RIN, multiple data groups for LICs may be present provided they are delineated by the appropriate Header and Trailer records. The Header record is essential for associating the RIN and LIC as well as the Lab Identifier with the analysis records. LICs cannot be combined within an EDD data group. The following diagram illustrates the LIC group data relationship within an EDD file.



While it is preferred that all the data for a RIN be presented within a single file, if necessary, multiple files for a RIN can be submitted provided the integrity of the LIC data group is maintained.

4.0 EDD FORMATS FOR SPECIFIC PSA MODULES

All EDD modules follow the general structure of a header record, analysis records and a closing trailer record. The order, specific content and field sizes may vary between modules.

4.1 GENERAL BIOASSAY SERVICES MODULES EDD FORMAT FORM

Header Line Format General Bioassay Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-10	RIN Number	Character (10)	Report Identification Number assigned by the Site.
11-20	File Date	Character (10)	(MM/DD/YYYY) Date of EDD creation.
21-30	Line Item Code	Character (10)	Line Item Code as requested on Site COC.
31-40	Laboratory ID	Character (10)	Laboratory ID as provided by the Site.
Note: All character fields are left-justified and padded to the right with blanks.			

Analytical Data Line Format General Bioassay Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-15	Analytical Batch ID	Character (15)	Unique number internal to laboratory performing analysis, see PSA module for specific requirements.
16-27	Employee Number	Character (12)	Employee Number or Social Security Number (as provided by the Site)
28-47	Sample Number	Character (20)	Sample Number (assigned by the site)
48-67	Laboratory Sample Number	Character (20)	Laboratory Sample Number (assigned by the laboratory)
68-77	Sample Receipt Date	Character (10)	(MM/DD/YYYY) Date Lab received sample
78-87	Date Analyzed	Character (10)	(MM/DD/YYYY) Date analysis performed
88-92	Result Identifier	Character (5)	Code that differentiates between analytical results, duplicates, spikes, and QC items. See Appendix C of GR02 for acceptable values.
93-108	CAS Number	Character (16)	Formal CAS number for the analyte. For Bioassay, see GR02 Appendix F.
109-138	Analyte	Character (30)	Descriptive name of the analyte (isotope). For Bioassay, see GR02 Appendix F.
139-148	Result (measured value)	Character (10)	Analytical Result associated with the analysis for this analyte.

Analytical Data Line Format General Bioassay Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
149-158	Result Units	Character (10)	dpm (pCi/L for Tritium)
159-163	Lab Validation Notation	Character (5)	"V" or "I" , Valid or Invalid data qualifier determined by the analyzing laboratory.
164-173	1 sigma error	Character (10)	Measurement uncertainty in dpm for each analyte requested. (pCi/L for Tritium)
174-183	Percent Tracer Recovery	Character (10)	Percentage of sample recovery for the added tracer.
184-189	Submitted Sample Size	Character (6)	Sample size
190-192	Sample Size Units	Character (3)	Sample size units in volume (ml) for urine or mass (g) for fecal.
193-202	Aliquot Size Analyzed	Character (10)	Entered if total sample not analyzed
203-212	Aliquot Size Units	Character (10)	Aliquot size units, entered if total sample not analyzed
213-222	MDA	Character (10)	Minimum Detectable Amount
223-242	Decision Level	Character (20)	Value based on the blank population in dpm (pCi/L for Tritium)
Note: All character fields are left-justified and padded to the right with blanks.			

Separator Line Format General Bioassay Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1	Line Separator	Character (1)	'$' Character to separate Data Lines from QC Data Lines

QC Results Line Format **General Bioassay Services Modules**			
Column(s)	Field Name	Field Type	Format/Contents
1-15	Analytical Batch ID	Character (15)	Unique number internal to laboratory performing analysis, see PSA module for specific requirements.
16-35	Laboratory QC Sample Number	Character (20)	Laboratory Sample Number (assigned by the laboratory)
36-40	Result Identifier	Character (5)	Code that differentiates between analytical results, duplicates, spikes, and QC items. See Appendix C of GR02 for acceptable values.
41-70	Analyte (isotope)	Character (30)	Descriptive name of the analyte. See GR02 Appendix F for acceptable value.
71-80	QC Result	Character (10)	QC sample result.
81-90	Error	Character (10)	1 sigma standard deviation (Assumed plus or minus value, do not enter value symbols '+' or '-'.)
91-100	QC Result Units	Character (10)	dpm or pCi/L for Tritium

101-110	Yield	Character (10)	Value as required per BA01 module. Assumed percentage, enter value without '%' symbol.
111-120	MDA	Character (10)	Minimum Detectable Amount
121-130	Known Value Of Laboratory Control Sample (LCS)	Character (10)	dpm of control standard added
131-140	Relative Bias Statistic (Bri)	Character (10)	Value calculated as required per BA01 module (cf. N13-30-1996 equation 16)
141-150	Date Analyzed	Character (10)	(MM/DD/YYYY) - Date analysis performed
151-166	CAS Number	Character (16)	Formal CAS number for the analyte. See 5.6 Appendix F - Acceptable CAS Numbers
Note: All character fields are left-justified and padded to the right with blanks.			

Trailer Line Format General Bioassay Services Modules			
Column(s)	Field Name	Field Type	Format/Contents
1-3	$$$	Character (3)	"$$$" End of file designator.
Note: All character fields are left-justified and padded to the right with blanks.			

4.2 DRINKING WATER - GENERAL CHEMISTRY / MICROBIOLOGY EDD FORMAT FORM

For Drinking Water General Chemistry / Microbiology EDDs, follow the Format specifications for Standard Services, Section 4.6 STANDARD SERVICES MODULES EDD FORMAT FORM.

4.3 DRINKING WATER-RADIOCHEMISTRY EDD FORMAT FORM

For Drinking Water Radiochemistry EDDs, follow the Format specifications for Standard Services, Section 4.5 RADIOCHEMISTRY MODULES EDD FORMAT FORM.

4.4 INDUSTRIAL HYGIENE MODULES EDD FORMAT FORM

For Industrial Hygiene EDDs, follow the Format specifications for Standard Services, Section 4.6 STANDARD SERVICES MODULES EDD FORMAT FORM.

4.5 RADIOCHEMISTRY MODULES EDD FORMAT FORM

Header Line Format Radiochemistry Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-10	RIN Number	Character (10)	Report Identification Number assigned by the Site.
11-20	File Date	Character (10)	(MM/DD/YYYY) Date of EDD creation.
21-30	Line Item Code	Character (10)	Line Item Code as requested on Site COC.
31-40	Laboratory ID	Character (10)	Laboratory ID as provided by the Site.
Note: All character fields are left-justified and padded to the right with blanks.			

Analytical Data Line Format Radiochemistry Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-15	Analytical Batch ID	Character (15)	Unique number internal to laboratory performing analysis, see PSA module for specific requirements.
16-35	Sample Number	Character (20)	Sample Number (assigned by the site)
36-55	Laboratory Sample Number	Character (20)	Laboratory Sample Number (assigned by the laboratory)
56-65	Sample Receipt Date	Character (10)	(MM/DD/YYYY) Date Lab received sample
66-75	Sample Volume Received	Character (10)	Required for Line Item Code RC02A03. Reporting units are (ml).
76-85	Date Analyzed	Character (10)	(MM/DD/YYYY) Date analysis performed
86-90	Result Identifier	Character (5)	Code that differentiates between analytical results, duplicates, spikes, and QC items. See Appendix C of GR02 for acceptable values.
91-106	CAS Number	Character (16)	Formal CAS number for the analyte. Site generated CAS numbers shall be used when formal numbers are not available. Contact APO office if CAS number is unknown.

Analytical Data Line Format Radiochemistry Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
107-136	Isotope	Character (30)	Descriptive name of the analyte. See PSA module and/or GR02 for acceptable values.
137-146	Result (measured value)	Character (10)	Analytical Result associated with the analysis for this analyte.
147-156	Result Units	Character (10)	Units reported are determined per PSA module. Acceptable format is listed in Appendix D of GR02.
157-161	Result Qualifier	Character (5)	See GR02 Appendix E - Result Qualifiers, for acceptable values.
162-171	2 sigma error	Character (10)	Reported value of measurement uncertainty as determined per PSA module.
172-181	Percent Tracer Recovery	Character (10)	Percentage of sample recovery for the added tracer or carrier, as applicable.
182-191	MDA	Character (10)	Minimum Detectable Amount
192-201	F/E	Character (10)	Equivalency test at 2 sigma. (required on duplicate sample)
202-204	LCS Yield	Character (3)	As required by PSA module. (OV / SV * 100)
Note: All character fields are left-justified and padded to the right with blanks.			

Trailer Line Format Radiochemistry Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-3	$$$	Character (3)	"$$$" End of data group designator.
Note: All character fields are left-justified and padded to the right with blanks.			

4.6 STANDARD SERVICES MODULES EDD FORMAT FORM

Header Line Format Standard Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-10	RIN Number	Character (10)	Report Identification Number assigned by the Site.
11-20	File Date	Character (10)	(MM/DD/YYYY) Date of EDD creation.
21-30	Line Item Code	Character (10)	Code as listed on Chain of Custody form sent with samples. See Standard Services PSA module for correct code format.
31-40	Laboratory ID	Character (10)	Laboratory ID as provided by the Site.
Note: All character fields are left-justified and padded to the right with blanks.			

Analytical Data Line Format Standard Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-15	Analytical Batch ID	Character (15)	Unique number internal to laboratory, see PSA module for specific requirements.
16-35	Sample Number	Character (20)	Sample Number (assigned by the site)
36-55	Laboratory Sample Number	Character (20)	Laboratory Sample Number (assigned by the laboratory)
56-65	Sample Receipt Date	Character (10)	(MM/DD/YYYY) Date Lab received sample
66-75	Date Analyzed	Character (10)	(MM/DD/YYYY) Date analysis performed
76-95	Matrix	Character (20)	Matrix of sample as identified by Line Item Code.
96-100	Result Identifier	Character (5)	Code that differentiates between analytical results, duplicates, spikes, and QC items. See GR02 Appendix C - Result Types, for acceptable values.
101-116	CAS Number	Character (16)	Formal CAS number for the analyte. Site generated CAS numbers shall be used when formal numbers are not available. Contact APO office if CAS number is unknown.
117-176	Analyte	Character (60)	Descriptive name of the analyte. See PSA module and/or GR02 for acceptable values.
177-186	Result (measured value)	Character (10)	Analytical Result associated with the analysis for this analyte.
187-196	Result Units	Character (10)	See GR02 Appendix D - Units of Measure, for acceptable values.

Analytical Data Line Format Standard Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
197-201	Result Qualifier	Character (5)	See GR02 Appendix E - Result Qualifiers, for acceptable values.
202-211	Dilution Factor	Character (10)	Required for diluted samples only. Recorded as a numeric value (i.e. 2.5, 5, 10, 100, etc.). Do not report a dilution factor of 1 for samples with no dilution.
212-221	Detection Limit	Character (10)	Detection Limit adjusted for dilution etc. See discussion in Section 4.6.1 Detection Limit and Result Qualifiers for Standard Services
222-224	Secondary Result Type	Character (3)	Code to designate analytical results for tentatively identified compounds (TIC) or surrogates (SUR). Minimum Detectable AmountOtherwise blank.
225-234	Extraction Date	Character (10)	(MM/DD/YYYY) The date of sample preparation at the lab for all samples that require preparation or extraction, including lab generated samples. Use the latest prep date if more than one exist.
Note: All character fields are left-justified and padded to the right with blanks.			

Trailer Line Format Standard Services Modules			
Column(s)	**Field Name**	**Field Type**	**Format/Contents**
1-3	$$$	Character (3)	"$$$" End of data group designator.
Note: All character fields are left-justified and padded to the right with blanks.			

4.6.1 Detection Limit and Result Qualifiers for Standard Services

"Detection Limit" is a generic term for the comparison value used to report and qualify results. Interpretation of the Detection Limit field depends on the specific area of analysis being provided. In following the general guidelines of CLP reporting protocol, the field should be used to report the IDL for inorganics and the MDL for organics as specified in the SOW applicable to the particular analysis, adjusted as needed for dilution etc.

The interpretation of the Detection Limit also affects what is reported in Result field and the Qualifier field as follows:

For organics, for results not detected above the MDL, report the RDL in the Result field with a U qualifier in the Qualifier field; for measurements between the RDL and the MDL, report the actual result in the Result field with a J qualifier in the Qualifier and the MDL in the Detection Limit field.

For inorganics, the CLP protocol specifies reporting the IDL as the Result with a U qualifier if the measured result concentration is less than the IDL. (See ILMO4.0 Exh B, Sec III, C) Note that the qualifier for results between the RDL and the IDL for inorganics is B. Note also that for reporting preparation blank results, the CLP rule is interpreted as follows: if the absolute value of the measured value is greater than the IDL, report the signed measured value; otherwise report the IDL with a U qualifier.

5.0 APPENDICES

5.1 Appendix A - EDD Delivery Process

The process by which the EDD is to be delivered to the APO EDD Server is currently under development. Exact specifications, requirements, and directions for access into the APO EDD Server shall be provided to the contracted laboratories when the process is finalized.

In the absence of the APO EDD Server, EDD files shall be provided via the 3.5 inch diskette method or by E-Mail. Submission of EDDs electronically is the preferred method of data transmittal. The E-Mail address for sending EDD files is:

Analytical.Services @rfets.gov

5.2 Appendix B - Sample Matrix Types

AIR - Sample of confined air.

FAUNA - Sample of animal tissues, bodies or composite; including mammals, insects, reptiles and amphibians.

FISH - Sample of aquatic vertebrate.

FILTER - Sample composed of any type of filter.

FLORA - Sample of any type of plant.

LIQUID - Sample of oils, solvents, or other non-aqueous liquids.

WATER - Sample of aqueous media. This sample matrix type shall also be used for all TCLP analysis.

SOIL - Sample of soil or sediment.

SOLID - Sample of asphalt, crushed glass or other solids.

SLUDGE - Sample of chemical sludge, mixtures of which are neither solid nor liquid.

WIPE - Sample of any material used as a wipe.

5.3 Appendix C - Result Types

QC Item types

PB - Preparation Blank, for Radiochemistry analysis.

RB - Reagent Blank (prep. blank for tritium). Radiochemistry only, used to identify reagent blank analysis.

LC(n)- Laboratory Control Sample, (n) identifies the nth analysis attempt performed on a laboratory control sample (i.e. LC1, LC2, etc.).

LD(n)- Laboratory Duplicate, (n) identifies the nth analysis attempt performed on a laboratory duplicate (i.e. LD1, LD2, etc.). Re-analysis of a replicate sample shall be designated by incrementing to the next nth value (i.e. a re-analysis or dilution of LD1 shall be designated LD2).

MB(n)- Method Blank, Gen. Chemistry only, (n) identifies the nth analysis attempt performed on a method blank (i.e. MB1, MB2, etc.).

MS(n)- Matrix Spike, Gen. Chemistry only, (n) identifies the nth analysis attempt performed on a matrix spike (i.e. MS1, MS2, etc.).

MD(n)- Matrix Spike Duplicate, Gen. Chemistry only, (n) identifies the nth analysis attempt performed on a matrix spike duplicate (i.e. MD1, MD2, etc.).

Analytical Result types

DL(n)- Laboratory Dilution, (n) identifies the nth analysis attempt performed on a laboratory sample (i.e. DL1, DL2, etc.).

RX(n)- Re-extraction, (n) identifies the nth analysis attempt performed on a re-extraction (i.e. RX1, RX2, etc.).

TR(n)- Target Compound, (n) identifies the nth analysis attempt performed on a target compound (i.e. TR1, TR2, etc.). A dilution of a target compound shall be designated by incrementing to the next nth value (i.e. a dilution of TR2 shall be designated TR3).

5.4 Appendix D - Units of Measure

C/100ML -	Counts per 100 milliliters
DPM -	Disintegration per minute
DPM/ML -	Disintegration per minute per milliliters
MG/L -	Milligrams per liter
MG/KG -	Milligrams per kilogram
UMHOS/CM -	Micromhos per centimeter
PCI/G -	Picocuries per gram
PCI/L -	Picocuries per liter
S.U. -	Standard Units (for pH analysis results)
UG/KG -	Micrograms per kilogram
UG/L -	Micrograms per liter
UG/WIPE -	Micrograms per wipe, used for PCBS
% -	For general chemistry use with percent solids, percent moisture, etc. ; For radiochemistry, report gravimetric/isotopic tracer yields
%REC -	For use with percent recovery on general chemistry quality control samples

5.5 Appendix E - Result Qualifiers

Gen. Chem. Qualifiers

A - TIC - suspected aldol-condensate product - organic
B - Analyte found in blank and sample-organic;
Result < RDL but ³ IDL-inorganic
D - Component identified using secondary dilution factor-organic;
E - Concentration exceeds calibration range of instrument-organic;
Estimate due to suspected interference - inorganic
I - Interference - organic
J - Estimated value < the detection limit
M - Replicate instrument readings not within control limits
N - Spiked recovery not within control limits - inorganic
S - Determined by method of additions - inorganic
U - Undetected, analyzed for, but not detected
W - Analytical spike recoveries not within control limits - inorganic
* - Duplicate agreement not within control limits - inorganic
+ - Determined by method of additions, correlation coefficient not within control limits - inorganic

Radiochemistry Qualifiers

U - Results < MDA (The result being reported is less than the MDA. If the MDA is blank, the ERROR is used as the limit.)
J - Result < RDL and no undetected "U" qualifier assigned (The result is less than the required detection limit (RDL) and no undetected ("U") qualifier is assigned.)
B - Reagent blank without "U" qualifier - result ≥ MDA (The reagent blank associated with this sample had a result without an undetected ("U") qualifier and the result is greater than or equal to the MDA for this sample.)
X - This identifier no longer valid. Definitive application for this identifier could not be determined.

A - Data is acceptable without conditions. For Line Item Code RC01A006 and RC02 module codes only.
C - Data is acceptable with conditions. For Line Item Codes RC01A006 and RC02 module codes only.
F - Data is unacceptable. For Line Item Codes RC01A006 and RC02 module codes only.
N - For and RC02 module codes only.

5.6 Appendix F - Acceptable CAS Numbers

Bioassay (BA01) Module

CAS Number	Isotope	EDD Analyte Name
10-12-8	Pu239,240	PU239240
14596-10-2	Am241	AM241
11-08-5	U233,234	U233234
15117-96-1	U235	U235
7440-61-1	U238	U238
10028-17-8	H3	H3